

Remarks

Claims 1-10 are pending in this action. Claims 1-10 stand rejected. Claims 1-9 are objected to. By this amendment claims 1 and 10 have been amended. Applicants respectfully request reconsideration of all pending claims herein.

Claim Objections - 35 U.S.C. § 112

The Examiner objected to the phrase "...having less test channels than pins..." in claims 1 and 10. Accordingly, claims 1 and 10 have been amended to read: "...having fewer test channels than pins..." Therefore, Applicants respectfully submit that the objections to claims 1 and 10 under 35 U.S.C. § 112 have been overcome.

Claim Rejections - 35 U.S.C. § 112

The Examiner rejected claims 1-9 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, the Examiner indicated that the usage of the term "measures" is unclear. Accordingly, Applicants have amended independent claim 1, changing "test measures" to "test pattern output measurements," to clarify that any test pattern output values that do not originate from the group of I/O pins within the active bank are excluded. Claims 2-9 are dependent upon claim 1, as amended. Therefore, Applicants respectfully submit that the rejection of claims 1-9 under 35 U.S.C. § 112, second paragraph has been overcome.

Claim Rejections - 35 U.S.C. § 103(a)

The Examiner rejected claims 1-8 under 35 U.S.C. § 103(a), as being unpatentable over U.S. Patent No. 6,448,796 issued to Ellison, et al. in view of U.S. Patent No. 5,348,759 issued to Schnurmann, et al. The Examiner also rejected claim 10 under 35 U.S.C. § 103(a), as being

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unpatentable over U.S. Patent No. 6,448,796 issued to Ellison, et al. in view of U.S. Patent No. 5,712,858 issued to Godiwala.

With respect to the rejection of claim 1, the Examiner stated that it would have been obvious to one of ordinary skill in the art to implement a method of parametric testing of high pin count circuits with low channel testers, citing Ellison in view of Schnurman.

Applicants respectfully submit that U.S. Patent No. 6,448,796 issued to Ellison, et al. is directed to a method of grouping I/O pins of common types of module drivers to a particular channel of an integrated circuit tester to reduce the incidence of shorts between adjacent pins. Ellison requires a circuit designer to "insert logic driver controls in the design to allow only a single group driver of a grouping bank to be active for any given test vector." (Col. 3, lines 63-65) Moreover, the logic control elements of Ellison must be designed for each individual integrated circuit design that is tested. (Col. 3, lines 66-67 through Col. 4, lines 1-9) Conversely, Applicants' invention does not require the custom design of logic controls that are specific to each design and is therefore not suggested or motivated by Ellison. (Applicants' Spec. Paragraphs 57, 58)

Applicants further submit that Schnurman teaches a method whereby a plurality of terminal pins are connected to a single channel, such that each test pattern forces a logic 0 or 1 to every input pin, which necessarily requires each pin to receive the same set of stimuli. (Col. 6, lines 24-32; Col. 8, lines 16-22) In contrast, Applicants' invention does not connect multiple pins of the device under test to a single tester channel. Instead, Applicants' invention permits more than one stimulus per test pattern on the external I/O pins through repeated simulation. Any and all of the pins in the active bank can have stimuli applied by one of the re-simulated test patterns. (Applicants' Spec. Paragraphs. 39, 51 and 57) Accordingly, Applicants' invention is not suggested or motivated by Schnurman.

Therefore, Applicants respectfully submit that the rejection of claim 1 under 35 U.S.C. §103(a) has been overcome and that claim 1 is in condition for allowance. Applicants have also

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amended claim 1 to clarify the recitation of the parametric test output voltage measurements. Claims 2-9 depend on claim 1, as amended. Therefore, Applicants respectfully submit that the rejection of claims 1-8 under 35 U.S.C. § 103(a) has been overcome and claims 1-8 are in condition for allowance.

In regard to the rejection of claim 10, the Examiner cited Ellison in view of Godiwala, stating that it would have been obvious to a person of ordinary skill in the art, at the time of invention, to combine the method of parametric testing claimed by Ellison with the testing system of Godiwala. The Examiner noted that Godiwala teaches connecting the contacts to the tester such that groups of contacts share individual tester channels. Conversely, Applicants invention discloses that for each test of a banked set of device I/O, the device I/O are assigned a single tester channel. Since Applicants do not utilize a parallel test of common device I/O, the individual failing devices can be isolated by the tests. In addition, Applicants note that the parametric tests performed in accordance with Applicants' invention may be constructed after a design is completed and the devices are fabricated, which is clearly not contemplated by the art cited. (Applicants' Spec. Paragraphs 57, 58) Indeed, Ellison and Godiwala both require custom logic to be incorporated in the design of the integrated circuit under test to support their respective test methodologies. (Ellison, Col 3, lines 66-67 through Col. 4, lines 1-9; Godiwala, Col. 5, lines 26-34, Fig. 2) Accordingly, Applicants respectfully submit that the flexibility of Applicants' test methodology is not suggested or motivated by Ellison or Godiwala.

Applicants have amended claim 10 to correct the errors in grammar and form noted by the Examiner. Accordingly, Applicants respectfully submit that the rejection of claim 10 under 35 U.S.C. § 103(a) has been overcome and all claims are in condition for allowance.

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Prior Art Made of Record

The prior art made of record by the Examiner and not relied upon, i.e. Rearick (U.S. Patent No. 6,658,613); Rohrbaugh, et al. (U.S. Patent No. 6,556,938); Littlebury (EP Patent No. 0388790 A2); and Chang, J.M. (Inspec Accession No. 3976214), have been reviewed and Applicants respectfully submit that the references cited do not anticipate or suggest the elements of pending independent claim 1 and independent claim 10, as amended.

Conclusion

Based on the foregoing, it is respectfully submitted that the pending claims in the subject patent application are in condition for allowance and that the application may be passed to issuance.

The Examiner is urged to call the undersigned at the number listed below if, in the Examiner's opinion, such a phone conference would aid in furthering the prosecution of this application.

Respectfully submitted,

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